



SUBSTITUTE SPECIFICATION
GEAR CHANGE DEVICE

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Field of the Invention

- 5 The present invention relates to a gear change device for shifting a transmission mounted on a vehicle.

Description of the Related Art

- 10 A gear change device for shifting a transmission comprises a select actuator for operating a shift lever in the direction of selection and a shift actuator for operating the shift lever in the direction of shift.

- 15 As the select actuator and the shift actuator, there have generally been used fluid pressure cylinders which provide fluid under pressure, such as air under pressure or hydraulic fluid under pressure, as a source of actuation. The select actuator and the shift actuator using the fluid pressure cylinders require piping connecting the source of fluid pressure to the actuators, an electromagnetic change-over valve for changing
20 over the flow passage of the operation fluid, and space for the arrangement thereof, resulting in an increase in the weight of the device as a whole.

- 25 In recent years, there have been proposed a select actuator and a shift actuator constituted by electric motors as a device for shifting a transmission mounted on a vehicle which is provided with neither a source of compressed air nor a source of hydraulic fluid under pressure. The select actuator and the shift actuator constituted by electric motors need neither the piping for connection to the source of fluid pressure
30 nor the electromagnetic change-over valve, unlike the actuators that use fluid pressure cylinders, and can, hence, be constituted in a compact size as a whole and in a reduced weight.

The actuator using an electric motor needs a speed reduction mechanism for obtaining a predetermined operating